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ABSTRACT

To help vocational education administrators and practitioners, this paper presents a framework for vocational education program evaluation. Evaluation is defined as the act of rendering judgments to determine a program's value; two major types are formative and summative. Vocational education evaluation should take a broader and more comprehensive approach than a focus on student achievement. This approach requires use of valid and reliable information of three interrelated types: needs, processes, and outcomes. The needs for vocational education include students' interests, knowledge, attitudes, and skills; the knowledge, attitudes, and skills employers want in employees; and the educational, economic, and social needs of society. Sources of information about vocational education program processes include: (1) organizational information; (2) program information; (3) support services and activities; (4) staff; (5) student demographic characteristics and educational achievement; and (6) community information. Also part of the evaluation framework are economic outcomes (labor force participation, employment and unemployment rates, training-related placement, type of employment, earnings, employee satisfaction with work, employer satisfaction with employees); educational outcomes (academic and higher-order thinking skills, knowledge of the world of work, occupational skills, school attendance and dropout rates, continuing education rates, satisfaction with education); and psychosocial outcomes (aspirations, attitudes, values, self-esteem, citizenship, and leadership). (28 references) (SK)

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# A FRAMEWORK FOR EVALUATING LOCAL VOCATIONAL EDUCATION PROGRAMS

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N. L. McCaslin
Department of Agricultural Education
The Ohio State University

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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# FOREWORD

The Educational Resources Information Center Clearinghouse on Adult, Career, and Vocational Education (ERIC/ACVE) is 1 of 16 clearinghouses in a national information system that is funded by the Office of Educational Research and Improvement (OERI), U.S. Department of Education. This publication was developed to fulfill one of the functions of the clearinghouse--interpreting the literature in the ERIC database. This guide should be of interest to vocational education administrators, practitioners, and evaluators engaged in assessing vocational education programs.

ERIC/ACVE would like to thank N. L. McCaslin for his work in the preparation of this publication. Dr. McCaslin, Associate Professor in the Department of Agricultural Education at the Ohio State University, has an extensive background in vocational education teaching, administration, evaluation, and planning. He was formerly Associate Director of the Evaluation and Policy Division of the National Center for Research in Vocational Education at Ohio State. He has served as an evaluation consultant in such varied settings as the U.S. Army, community colleges, universities, state departments of education, state advisory councils, the Unesco Institute of Education, and government ministries in Mexico, Uganda, and Scotland.

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Ray D. Ryan
Executive Director
Center on Education and
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# EXECUTIVE SUMMARY

One effect of educational reform movements is greater emphasis on evaluation. To help vocational education administrators and practitioners with program assessment, this paper presents a framework for vocational education program evaluation. Evaluation is defined as the act of rendering judgments to determine a program's value; two major types are formative and summative. Vocational education evaluation has been encouraged or mandated by the Vocational Education Act of 1963, the 1968 Amendments, the Educational Amendments of 1976, and Carl D. Perkins Vocational Education Act of 1984, and the recently enacted Carl D. Perkins Vocational and Applied Technology Education Act.

Vocational education evaluation should take a broader and more comprehensive approach than a focus on student achievement. This approach requires use of valid and reliable information of three interrelated types:

1. The needs for vocational education expressed by students, employers, and society
2. Vocational education program processes
3. Vocational education program outcomes

A framework for evaluating vocational education consists of the following components:

Needs

1. Students' interests, knowledge, attitudes, and skills
2. The knowledge, attitudes, and skills employers want in employees
3. The educational, economic, and social needs of society

Vocational Education Processes

1. Organizational information (organizational arrangement, administrative style, organizational climate, teaching styles, type of organization)
2. Program information (goals and objectives, instructional content and delivery methods, administrative support, recruitment, facilities and equipment, cost)

3. Support services and activities information (student organizations, job placement, continuing education, planning, evaluation, personnel development)

4. Staff information (demographic characteristics, educational experiences and competence, occupational experiences and competence)

5. Student information (demographic characteristics, educational achievement)

6. Community information (linkage with business, industry, other educational agencies, other training programs; type of community)

**Vocational Education Outcomes**

1. Economic outcomes (labor force participation, employment and unemployment rates, training-related placement, type of employment, earnings, employee satisfaction with work, employer satisfaction with employees)

2. Educational outcomes (academic and higher-order thinking skills, knowledge of the world of work, occupational skills, school attendance and dropout rates, continuing education rates, satisfaction with education)

3. Psychosocial outcomes (aspirations, attitudes, values, self-esteem, citizenship, leadership)

Steps for using the evaluation framework are as follows:

- Determining the type, purpose, and extent of the evaluation
- Selecting the components
- Identifying the sources and types of information to be collected
- Collecting the required information
- Analyzing and interpreting the information
- Preparing an evaluation report

Information on vocational education program evaluation may be found in the ERIC system using the following descriptors: Accountability, Data Collection, Educational Change, *Evaluation Criteria, Information Needs, Information Sources, *Outcomes of Education, *Program Evaluation, Program Improvement, *Vocational Education. Asterisks indicate descriptors that are particularly relevant.

# INTRODUCTION

Evaluation has taken on increased meaning and importance in the last decade with the emphasis that has been placed on educational reform. The educational reform movement first became apparent when the Secretary of Education, T. H. Bell, created the National Commission on Excellence in Education on August 26, 1981, and charged it to report on the quality of education in the United States. The commission report, ***A Nation At Risk: The Imperative for Educational Reform*** (NCEE 1983) stated:

> If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. (p. 5)

This report stimulated interest throughout the country and many states initiated similar study groups. These groups were asked to examine their educational system, determine problems, and recommend changes for improving their programs.

In the 1990s there continues to be wide concern over the level of educational achievement in the United States. According to "The 22nd Annual Gallup Poll of the Public's Attitudes toward the Public Schools" (Elam 1990), more than three-quarters of those questioned indicated that they attach very high or high priority to all six of the national goals for education proposed by President Bush and the 50 state governors. President Bush, in his concluding remarks to the Education Summit held at the University of Virginia on September 28, 1990, stated:

> There is a need for the first time in this nation's history to have specific results-oriented goals (for education). We recognize the need for . . . accountability.

The National Governors' Association (1990) stated that the country is facing a major crisis in education. They reported that the educational system is obsolete due to technological, economic, social, and demographic changes. According to their report--

> over the course of the next decade, our nation must better educate far more Americans, of all ages, to new kinds and higher levels of knowledge and skills than ever before. We must do this with an increasingly diverse population, many of whom face substantial economic, social or other barriers to learning, such as the effects of substance abuse, teen pregnancy or inadequate health care. None of our citizens can be written off. (p. 7)

Several states (for example, California, Connecticut, Iowa, Kansas, Maryland, New Jersey, and Ohio) have taken steps to make their educational systems more accountable for their outcomes. These include such outcomes as basic skill achievement, attendance, and dropout rates. Regardless of the outcomes selected, the message is clear: states want their

schools to demonstrate a responsible level of accountability for the funds that have been entrusted to them.

If educational programs are to reach their objectives, increased levels of cooperation among the schools, parents and students, and business and industry are required. Much of this effort in the past has been fragmented with little articulation of effort. Much more needs to be done to smooth the transitions between education and work.

Although change is necessary, educators, parents, and employers often find it difficult. All too often, we are uncomfortable with the adjustments it requires and want to hold on to the practices of the past. This type of behavior must be discarded as we approach the 21st Century.

The field of vocational education has not been unaffected by the educational reform movement for it has also spurred interest in the evaluation of vocational education programs. This paper is intended to help administrators and vocational education practitioners with the evaluation of local vocational education programs. It begins by defining evaluation and then provides an overview of evaluation in vocational education. Next, types of information needed for evaluating vocational education are described. Then, a framework for evaluating vocational education, which uses these information categories as a basis, is presented. The paper concludes with recommendations for using the evaluation framework.

# EVALUATION IN VOCATIONAL EDUCATION

One of the major problems in discussing evaluation is that there is no widely accepted definition of evaluation. Indeed, this lack of agreement has led to the development of a variety of approaches to evaluation. Worthen and Sanders (1987) classified the different approaches into the following six categories:

1. Objectives-oriented approaches
2. Management-oriented approaches
3. Consumer-oriented approaches
4. Expertise-oriented approaches
5. Adversary-oriented approaches
6. Naturalistic and participant-oriented approaches

For the purposes of this paper, the definition of evaluation offered by Worthen and Sanders (1987) is used: "evaluation . . . (is) the act of rendering judgments to determine (a program's) value--worth and merit" (p. 24).

Two major types of evaluation are generally accepted in discussions of evaluation: **formative** and **summative**. Michael Scriven (1967) was the first to differentiate between these two types of evaluation.

**Formative evaluation** is conducted throughout a program to improve its operation. This type of evaluation primarily is designed to provide feedback for revising or improving the procedures used in the programs.

**Summative evaluation**, on the other hand, is conducted at the conclusion of a program to provide evidence of its worth or merit. This type of information is often used to document the effectiveness of a program. In this sense, the purpose of summative evaluation is accountability.

Evaluation has been an area of concern for vocational education teachers and administrators for many years. Early evaluation efforts centered on conducting follow-up studies to determine the degree to which vocational education graduates found placements in jobs that were related to their training. This type of evaluation is summative. Other early forms of evaluation relied on an accreditation type of visit by external teams of individuals. This is an example of formative evaluation.

The 1963 Vocational Education Act was one of the first pieces of federal legislation indicating the need for states to conduct evaluations of their vocational education programs. Many evaluation efforts resulting from this mandate consisted of reviewing vocational education processes and follow-up information on program graduates.

In 1968, the Vocational Education Amendments to the 1963 Vocational Education Act continued to emphasize state evaluation activities. They also gave

evaluation responsibilities to state advisory councils.

The Education Amendments of 1976 (P.L. 94-482), which revised the Vocational Education Act of 1963, further expanded the responsibility for evaluation and had at least 28 references to different forms of evaluation (Wentling 1980). These evaluation requirements were designed to increase the responsiveness of vocational education to changing labor markets, and they required states to evaluate their programs every 5 years and to determine the extent to which programs completers and leavers--

- found employment in occupations related to their training, and
- were considered by their employers to be well-trained and prepared for employment.

Seven different groups were specifically charged with conducting vocational education evaluations in the 1976 Amendments:

1. State boards of vocational education
2. State advisory councils for vocational education
3. The National Advisory Council for Vocational Education
4. The U.S. Office of Education's Bureau of Occupational and Adult Education
5. The National Institute of Education
6. The National Center for Education Statistics
7. The U.S. Office of Education's Office of Evaluation and Dissemination

The Carl D. Perkins Vocational Education Act (P.L. 98-524) was enacted in 1984. This legislation was designed--

> to amend the Vocational Education Act of 1963 to strengthen and expand the economic base of the Nation, develop human resources, reduce structural unemployment, increase productivity, and strengthen the Nation's defense capabilities by assisting the States to expand, improve, and update high-quality programs of vocational-technical education, and for other purposes. (p. 2435)

The evaluation requirements of P.L. 98-524 charged the states to develop measures for the effectiveness of vocational education programs including the following:

- The occupations to be trained for, which will reflect a realistic assessment of the labor market of the state;
- The levels of skills to be achieved in particular occupations, which will reflect the hiring needs of employers; and
- The basic employment competencies to be used in performance outcomes, which will reflect the hiring needs of employers. (p. 2447)

Congress has recently enacted the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. This legislation continues to include evaluation specifications. It requires states to develop core standards and measures of performance for secondary and postsecondary vocational education programs. These performance standards are to include the following:

- Measures of learning and competency gains, including student progress in the achievement of basic and more advanced academic skills

- One or more measures of performance, which shall include only--

  -- competency attainment;

  -- job or work skill attainment or enhancement including student progress in achieving occupational skills necessary to obtain employment in the field for which the student has been prepared, including occupational skills in the industry the student is preparing to enter;

  -- retention in school or completion of secondary school or its equivalent; and

  -- placement into additional training or education, military service or employment

- Incentives or adjustments that are--

  -- designed to encourage services to targeted groups, or special populations; and

  -- for each student, consistent with the student's individualized education program developed under section 614(a)(5) of the Education of the Handicapped Act, where appropriate

- Procedures for using existing resources and methods developed in other programs receiving federal assistance [Section 115 (b)]

This section indicated that Congress has recognized the importance of evaluating vocational education programs by including evaluation requirements in the federal vocational education legislation for nearly 30 years. This sustained level of concern about evaluation at the federal level emphasizes the continuing need to gather the best evaluation information possible in developing high quality vocational education programs at the local level.

# INFORMATION NEEDED FOR VOCATIONAL EDUCATION EVALUATION

If vocational education is to provide the citizens of the United States with the skills they need to compete in the marketplace and lead meaningful lives, then the evaluation of these programs becomes even more important. Much of the current literature on educational reform could lead one to conclude that the only important evaluation information is related to results in terms of student achievement. However, if information on student achievement in vocational and academic skills is all that is available, how can teachers and administrators know what worked and did not work? Upon what basis should decisions to add and drop programs be made? What should be changed in order for vocational students to achieve at higher levels?

This paper suggests that those concerned with evaluating vocational education consider a broader and more comprehensive approach to evaluation. This approach requires the use of valid and reliable information of three major types:

1. The **needs** for vocational education as expressed by clients (that is, students and employers) and society
2. The educational **processes** followed by vocational education programs
3. The **outcomes** achieved by vocational education programs

The interrelationships of these three types of evaluation information are presented in figure 1. A brief description of these three types follows.

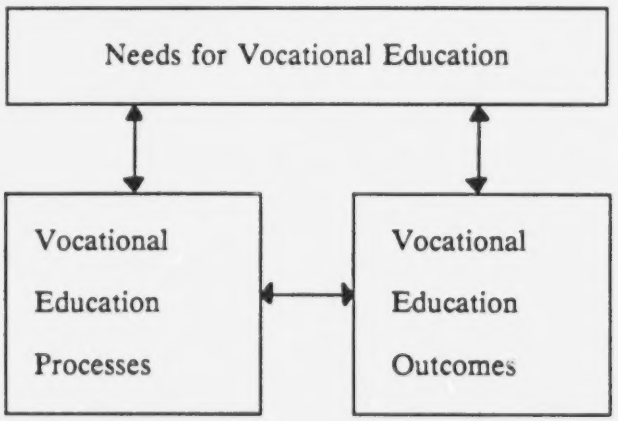


Figure 1. Interrelationships of evaluation information

## Needs for Vocational Education

Vocational education programs in the United States are basically offered as electives in secondary and postsecondary education agencies. Therefore, individuals will not enroll unless they feel that a program would meet their needs or satisfy their desire for a type of service they would like to receive. Thus, vocational education is a "customer" driven program. "Customers" here are broadly defined to include all groups in a community that might have a stake in vocational education (Rossi and Freeman 1989).

Kaufman and Stone (1983) indicated that in assessing needs it is necessary to show and document gaps between current results and desired results (in terms of outcomes) and then to place these gaps (needs) in priority order. Accordingly, needs are concerned with determining the extent or magnitude of a problem.

Needs can be determined by reviewing existing information (for example, labor market information and educational achievement levels) or collecting new information. This information might be of either a quantitative or qualitative nature.

## Vocational Education Processes

Historically, accreditation reviews have devoted much of their attention to examining the processes used by educational agencies. Many states' 5-year reviews of their vocational education programs have relied on this type of information. Program sponsors/funders typically place heavy emphasis on process information in demonstrating their accountability.

Process information provides evaluators with a basis for understanding and interpreting what has occurred. If vocational education programs are to be improved as a result of an evaluation, it is essential to provide information about how they have been conducted. Rossi and Freeman (1989) referred to the evaluation of processes as systematic monitoring to examine program coverage and delivery.

## Vocational Education Outcomes

As previously discussed, the current emphasis in educational evaluation is on documenting educational effectiveness in terms of student achievement. Stufflebeam (1969, 1971, 1983) and Stufflebeam and Shinkfield (1985) referred to evaluating the outcomes of educational programs as product evaluation. Among the questions that product evaluation answers are the following:

- What results were obtained?
- How well were needs reduced?
- What should be done with the program after it has run its course?

Rossi and Freeman (1989) referred to evaluating outcomes as "impact assessments (which) are undertaken to establish whether or not interventions produce their intended effects" (p. 225). The National Governors' Association (1990) report, *Educating America: State Strategies for Achieving the National Education Goals*, stated that "national education goals will be meaningless unless progress toward meeting them is measured accurately and adequately, and reported to the American people" (p. 39).

# A FRAMEWORK FOR EVALUATING VOCATIONAL EDUCATION

Using the three types of information needed for evaluating vocational education, an evaluation framework is presented in figure 2. This framework is not proposed as a rigid model that all evaluations should follow. Rather, it is presented as a guide for carefully thinking through what might be included in an evaluation of vocational education. The remainder of this section discusses possible components for each of the three types of information.

## The Needs of Students, Employers, and Society

In the Peters and Waterman (1987) book, *In Search of Excellence*, Lew Young, Editor-in-Chief of *Business Week*, is quoted as saying:

> Probably the most important management fundamental that is being ignored today is staying close to the customer to satisfy his (sic) needs and anticipate his (sic) wants. (p. 156)

Educators need to understand and anticipate the needs of their customers. If the needs of the vocational education customer are to be taken seriously, educators must begin collecting better information about students, employers, and society.

### Students

Today's vocational education students come with a variety of needs. Increasingly, they come from one-parent, lower socioeconomic status, and minority families. *The Forgotten Half: Pathways to Success for America's Youth and Young Families* (The William T. Grant Foundation Commission on Work, Family and Citizenship 1988) reported that--

> our two-year study of 16-24-year-olds has convinced us that, as young Americans navigate . . . from youth to adulthood, far too many flounder and . . . fail. . . . Although rich in material resources, our society seems unable to ensure that all our youth will . . . face their futures with . . . confidence and security. This is especially true of the 20 million non-college-bound young people we have termed the forgotten half. (p. 1)

Similarly, vocational educators must become increasingly concerned with adults who are struggling to survive in the workplace. Of particular concern among the potential students in these categories are disadvantaged or handicapped people, people entering nontraditional occupations, homemakers, immigrants, individuals with limited English proficiency, and individuals who are incarcerated. The workplace is demanding that even those with "good jobs" receive training and

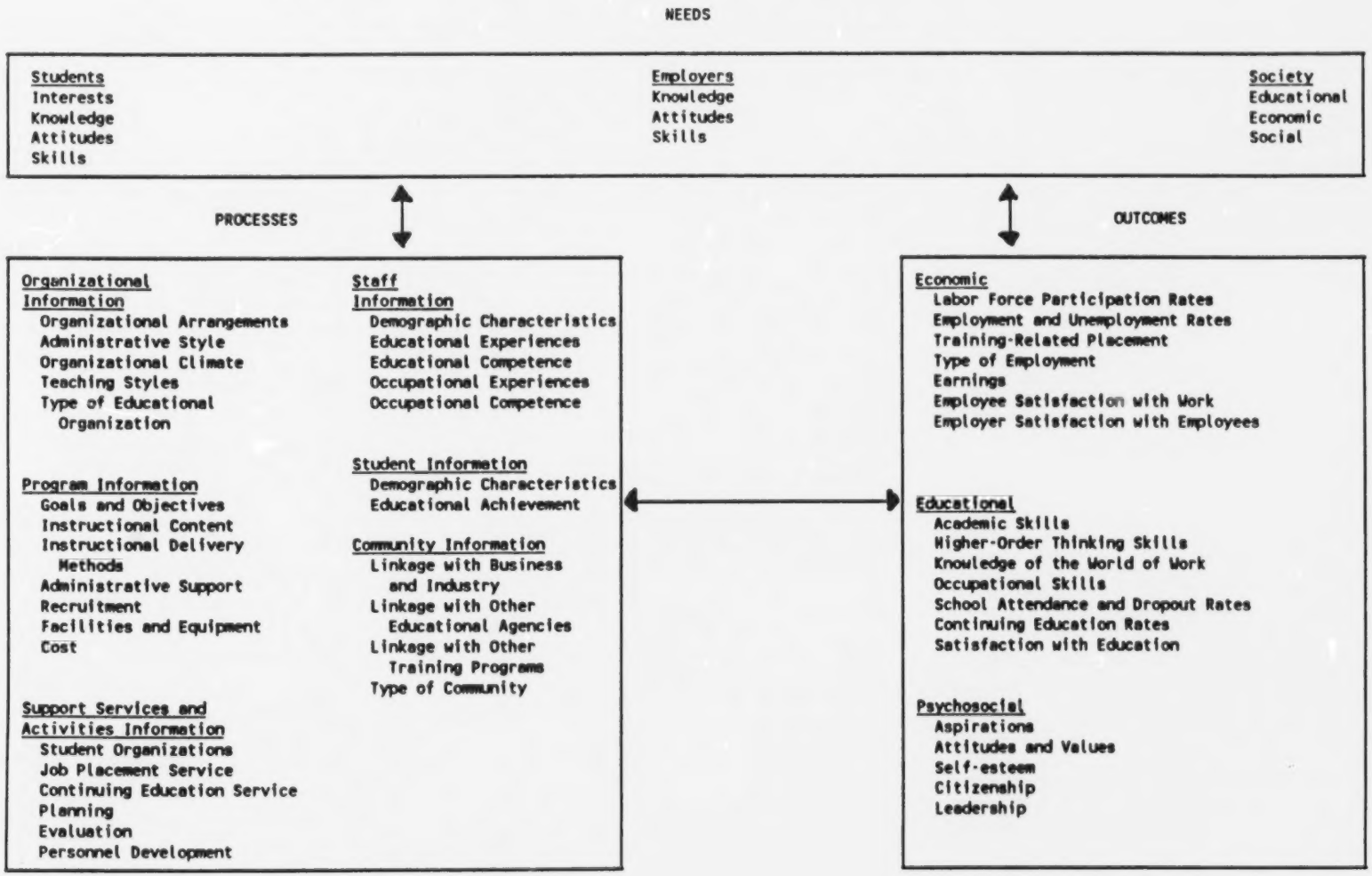


**Figure 2. A framework for evaluating vocational education**

retraining to meet the rapidly changing demands of the global market.

In attempting to determine the needs of these vocational education customers, information is needed regarding their **interests, knowledge, attitudes, and skills**. Without taking this type of information into consideration, vocational education programs are likely to be judged irrelevant by these individuals. As a result, they will seek education and training from other agencies or become dropouts--further reducing the nation's productivity and economic growth.

## Employers

Another important group of customers for vocational education are the employers. The chief executive officers (CEOs) of large businesses have become more vocal in expressing the needs of their organizations (Iacocca and Novak 1987; Kearns and Doyle 1988; Sculley and Byrne 1987). However, these businesses are only one type of vocational education employer customer. Their needs may not be the same as those of other employer customers--the medium-sized and small businesses who also employ vocational education students or the entrepreneurs who create their own jobs after completing a vocational education program.

Cetron and Davies (1989) projected that "by the turn of the century, most of our mid-sized institutions will have vanished, but thousands of tiny companies will be flourishing beneath the feet--and notice--of the giants" (p. 204). Whether or not this speculation comes about, vocational educators need to consider who their employer customers are. Regardless of whether these customers are large, medium, or small, educators need to seek their advice regarding the **knowledge, attitudes, and skills** they would like in their employees.

It is also important to note that, in the large and medium-sized businesses, input should be sought from more than one individual. This is particularly important because businesses are increasing the amount of employee participation in management and stressing the autonomy and creativity of the worker. Information on needs collected from such individuals as personnel directors, division heads, and line supervisors is essential in determining the knowledge, attitudes, and skills needed by these employer customers.

The needs of the entrepreneur as an employer customer have been overlooked in most evaluation efforts in vocational education. If Cetron and Davies (1989) are correct in their prediction about the dramatic increase in small companies, the needs of this type of customer must be determined.

## Society

Another important customer of vocational education is society itself. These customers include such groups as taxpayers, school board members, boards of trustees, legislators, policy makers, and parents. The **educational, economic, and social needs** of society are often expressed by the media or through statistical and analytical reports published by the government and private foundations.

Reports on the educational needs of society are particularly abundant in the media. Among the types of information expressing educational needs are school census data, school attendance and dropout rates, basic education achievement scores, and rates of continuing postsecondary education.

A variety of economic information and statistics is published at the national, state, and local levels. These figures provide information that is relevant to those concerned about vocational education programs. Among the types of economic information are unemployment rates, number of building permits issued, average hours employees work per week, and labor market projections.

A number of social indicators are also relevant to vocational education programs. Among the types of information that could be used are census information (particularly since the 1990 information was just collected) on numbers of school-aged students, racial composition, and marital status. Statistics on the number of teenaged parents, percentage on public assistance, number receiving Aid to Families with Dependent Children, number of handicapped individuals, and number receiving free or reduced price school lunches represent yet another source of valuable information.

## Vocational Education Processes

An examination of various processes of vocational education has been a major focus of statewide evaluation efforts since the implementation of the 1968 Amendments to the Vocational Education Act of 1963. Building upon the model used by accreditation organizations, these efforts relied heavily upon a process evaluation in which review teams went into the schools, following a self-study, to interview, observe, and review documents related to how these programs were operated. These statewide evaluation systems often included specific components such as curriculum and instruction, facilities, equipment, staff, student assessment, and student placement and follow-up. Many states continue to use these same types of statewide evaluations today and have expanded the process to include other components such as those dealing with equity, disadvantaged, handicapped, and nontraditional enrollments.

In preparing this paper, the author reviewed materials from many statewide evaluation systems and other vocational education evaluation studies. As a result, six major types of information emerged as important in conducting process evaluations of vocational education: organizational information, program information, support services and activities information, staff information, student information, and community information.

### Organizational Information

Public vocational education programs operate within the broader environment of a secondary or postsecondary educational organization. How these organizations behave and operate is an important source of information in evaluating vocational education programs. Information about an organization can be obtained by interviews, observations, reviews of existing documents and information, and surveys--either individually or in combination. Potential areas of interest in an evaluation include the following:

- Organizational arrangements
- Administrative style
- Organizational climate
- Teaching styles
- Type of educational organization

Two important considerations in evaluating the **organizational arrangements** for vocational education are its administrative structure and physical location. The organizational chart provides an initial indication of how the school or college is structured to administer vocational educa-

tion programs. However, it is often informative to discuss the administrative arrangements with faculty and administrators to find out how close the stated administrative arrangements are to the actual situation. Another item to consider is the program's physical location within a building. The accessibility of a program to students can be an important factor in determining who enrolls.

Administrators are often identified as a key factor in having an effective organization. These individuals usually set the tone and direction for the organization. How administrators perceive their role in carrying out their functions (**administrative style**) serves as an important signal to faculty and students in determining the extent to which they will take responsibility in the teaching and learning process.

Another important characteristic to be considered is that of **organizational climate**--the set of properties that are perceived by the administrators, faculty, and students as influencing the performance of people in an organization (adapted from Gibson, Ivancevich, and Donnelly 1979). Therefore, organizational climate is an important element in helping to shape the opinions of and anticipated outcomes for vocational education programs.

The **teaching styles** used in an educational organization are also important considerations in evaluating vocational education programs. One of the hallmarks of vocational education has been that of learning by doing. This educational process requires students to become active in concrete learning situations, whether they be developing basic educational skills or occupational skills. An evaluation of vocational education should examine the appropriateness and relevance of the teaching styles to the outcomes expected.

The **type of agency** offering vocational education programs is often overlooked when evaluations of these programs are conducted. Not all secondary and postsecondary agencies are alike. Secondary schools can be classified into organizations such as comprehensive high schools containing their own vocational education programs, high schools that cooperate with other schools in offering vocational education programs at another location, and separate vocational education high schools with their own academic offerings. Similarly, postsecondary schools can be classified as community colleges, technical colleges/institutes, or technical colleges/institutes within 4-year colleges. These types of organizations often have decidedly different types of vocational programs. In other instances, one educational organization might offer both secondary and postsecondary programs. Therefore, the type of educational organizations offering vocational education programs should be identified so that the results of the evaluation could be compared with those of similar organizations.

### Program Information

Information related to how vocational education programs are conducted is important in determining what changes need to be made in these programs or in determining how to implement similar programs in another location. The degree to which programs are operated as they were designed is essential if one is to judge the outcomes obtained. Potential areas of interest include--

- Goals and objectives
- Instructional content
- Instructional delivery methods
- Administrative support
- Recruitment
- Facilities and equipment
- Cost

The goals and objectives provide the basic structure and road map for vocational education programs. Clear statements of goals and objectives are essential if everyone is to develop a sense of agreement about the purposes of these programs. These statements should be included in documents such as curriculum guides, courses of studies, or plans of instruction.

The instructional content should be consistent with the goals and objectives. This content should be based on current industry standards and should reflect the needs of students and the community. Many vocational education programs have determined the instructional content by techniques such as task analyses and DACUM (Developing A Curriculum). The curriculum guides, courses of studies, or plans of instruction should also be examined to determine the scope and sequence of the instruction and see how safety instruction is provided.

The instructional delivery methods should be well-balanced, with a variety of teaching and learning approaches in the classroom instruction, supervised experience, and vocational student organizations. Evidence related to how articulation and integration of vocational and academic instruction are achieved should also be obtained.

Administrative support should not be overlooked as an area of interest. On the surface this area may appear to be easy to determine. In making determinations of administrative support for vocational education, the perceptions of several different stakeholders need to be checked as well as reviewing advisory committee minutes and budget allocations.

Recruitment of students is especially important for vocational education since these programs are elective. Teachers, administrators, and guidance counselors will need to have recruitment and promotional materials available for students considering taking vocational education programs or courses. The content of these materials should be reviewed with both accuracy and equity concerns in mind.

Facilities and equipment represent yet another area of interest related to program information. Just as students in the science areas need access to up-to-date facilities and equipment, vocational education students also require access to modern technology. The provision of facilities and equipment may be a shared responsibility of both the school and business and industry. Some skills needed in the operation of equipment might be developed during the classroom instruction and other required skills may need to be developed during the student's supervised occupational experience program.

Finally, the cost of the program should be reviewed. A major item will be personnel costs. However, budgets should be examined to see that additional funds are provided for items such as instructional materials, equipment, and supplies.

### Support Services and Activities Information

To offer an effective program of vocational education, several support services and activities are recommended. An evaluation of vocational education needs

to consider the degree to which these services and activities are provided. Potential areas of interest include--

- Student organizations
- Job placement service
- Continuing education service
- Planning
- Evaluation
- Personnel development

**Student organizations** have been an important aspect of vocational education for many years. These organizations include the Distributive Education Clubs of America (DECA), FFA (formerly the Future Farmers of America), Future Business Leaders of America (FBLA), Future Homemakers of America (FHA), Health Occupations Students of America (HOSA), Home Economics Related Occupations (HERO), Phi Beta Lambda (PBL), Vocational Industrial Clubs of America (VICA), and Technology Students Association (TSA). These organizations provide many opportunities for students to develop self-esteem, leadership, and citizenship. Additionally, these student organizations sponsor numerous competitive events and contests where their members' competence is evaluated.

A **job placement service** is often included in vocational education programs to help students find employment. Individual teachers often take the sole responsibility for the placement of their students. At other times, especially in larger programs, the job placement service is centralized with individuals specifically responsible for this service. Some schools have job placement services using some centralized placement functions, but leaving the actual responsibility of job placement with the teachers.

A **continuing education service** is the assistance offered to students desiring to pursue additional schooling. It is as important to vocational education students as it is to academic students since education is increasingly viewed as a lifelong process. The increasing number of employers requesting individuals with more than a high school education also reinforces the need for this service.

The necessity of **planning** from both a strategic and tactical point of view is being recognized as an essential component in reforming education. ***Ohio's Future at Work*** (Ohio Department of Education 1990) is one example of the importance that state departments of vocational education are placing on developing strategic plans for the reform of education. These types of long-range plans develop a 3- to 5-year vision for vocational education and provide the basis for tactical (operational) plans regarding what and how it will be carried out over each of the ensuing years.

**Evaluation** activities are closely linked with planning. In planning, emphasis is placed on stating intentions ("What do we want to do?") whereas evaluation places emphasis on determining the degree to which stated expectations were met ("Did we do what we planned?"). Evaluation should examine the outcomes of a program and relate them to the various needs and processes contributing to or hindering these accomplishments so that the program can be improved.

**Personnel development** encompasses those inservice activities primarily designed to develop or enhance the knowledge or skills of vocational education teachers and administrators. These activities can be of a formal or informal nature and offered either for credit or noncredit. The current educational reform movement will generate many needs for personnel development.

## Staff Information

The teachers and administrators are the keystone in developing high quality vocational education programs. Efforts to evaluate vocational education need to consider information about their background and experience. The types of information needed include--

- Demographic characteristics
- Educational experiences
- Educational competence
- Occupational experiences
- Occupational competence

**Demographic information** is important in dealing with issues such as the extent to which vocational education is dealing with equity issues and nontraditional programs. In these cases it would be important to know both the gender and race of the vocational education teachers and administrators.

The **educational experiences** of vocational education teachers and administrators are quite varied. Sometimes they come directly from business and industry with little or no formal postsecondary education. Some will have completed a 2-year program in a community college or technical institute. Others will have completed 4-year college degrees--some in education and some in other areas (health, business, agriculture, human ecology, engineering, and so forth). Similarly, these individuals have varied experiences in and with vocational education. Some will have worked only as teachers, others will have worked as both administrators and teachers. The type and amount of educational experiences that teachers and administrators possess represent important information in evaluating vocational education programs.

Serious questions regarding the **educational competence** of educators have been raised by many in the educational reform movement. To address these concerns, information is needed regarding the basic skill levels that vocational educators possess in reading, writing, and computation.

The amount of **occupational experience** that vocational educators possess is often included in evaluating vocational education programs. The recency of this experience has been receiving increased attention because of the rapid changes that are occurring in the workplace and society.

**Occupational competence** represents yet another important source of information about the vocational education staff. The teachers' level of competence will affect their students' acquisition of the fundamental skills necessary to become productive members of the work force. Some states require occupational competency testing before a teacher can be certified. The educational reform concern over the degree to which teachers are competent to teach their subject matter is as important in vocational education as it is to the rest of the educational community.

## Student Information

The need for information regarding the students whom vocational education serves is of paramount importance in evaluation. This information can be used initially as baseline information in determining what students learn in vocational education. Furthermore, it can be used as a controlling variable when comparisons of achievement with other types of students are made. Among the types of information needed are--

- Demographic characteristics
- Educational achievement

Students' **demographic characteristics** such as grade level, gender, race, and socioeconomic status (SES) are valuable in understanding what type of student is participating in vocational education. Vocational education often has been viewed as a second-rate education involving greater proportions of minorities and students with low SES. Vocational education has also been charged with sex-role stereotyping. Any evaluation efforts addressing these concerns would need to examine student demographic information.

The **educational achievement** in both academic and vocational skills is especially important as more emphasis is being placed on the results of educational programs. The present accountability movement has placed most of its emphasis on student achievement at the end of a course or program. However, approaches such as "value-added" evaluations, in which educational agencies need to document how much students learned, also will require educational achievement levels for students entering the program.

### Community Information

The community has always played an important role in vocational education. Since its inception, vocational educators have promoted the involvement of employers and parents in planning and operating their programs. The use of advisory groups to review a program, particularly to keep it up to date and relevant, has been a common practice. The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 continues this tradition by calling for the involvement of employers, parents, teachers, students, and other providers in the planning, operation, and evaluation of vocational education programs. The types of information useful in the evaluation of these programs include--

- Linkage with business and industry
- Linkage with other educational agencies
- Linkage with other training programs
- Type of community

A program's **linkage with business and industry** is not a recent development. These types of arrangements have been common since the inception of vocational education. One important use of advisory councils--consisting of personnel from business, industry, and labor--is for evaluation. These groups are particularly well suited to determine needs for programs; identify and examine course content; review facilities, equipment and supplies; suggest procedures for coordinating and collaborating with business and industry; and assess student occupational competence.

The emphasis on **linkage with other educational agencies**, on the other hand, is a more recent occurrence. The increasing competition for the limited funds available for supporting public education and training programs has reinforced the need for these agencies and organizations to develop collaborative arrangements with one another. Many secondary and postsecondary agencies have developed articulation agreements to help students move from one program to another.

Another more recent development is the **linkage with other education and training programs.** Not only do these arrangements often result in economic benefits, they also facilitate the delivery of services

to the participants. The 1990 Perkins Act permits states to use funds to coordinate services with the Job Training Partnership Act (JTPA) and the Wagner-Peyser Act for coordinated services.

The **type of community** is another category of information that needs to be considered when conducting evaluations of vocational education. The various types of communities include rural, urban, and suburban areas. This identification will facilitate the comparison of program results with similar communities, development of appropriate conclusions, and preparation of realistic policy recommendations.

## Vocational Education Outcomes

Vocational education outcomes refer to the results or accomplishments of those who participate in these programs. These outcomes should be easily understood and agreed upon by vocational education stakeholders. An outcome might consist of either a single statistic or a composite measure based on several factors. The terms core standards, measures of performance, and performance standards are sometimes used in reference to educational outcomes (as in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 and the Job Training Partnership Act).

The outcomes of vocational education often have been thought of solely in economic terms. However, more recent discussions and studies have included a wider range of educational, psychological, and sociological outcomes. For the purposes of this paper, three major types of outcomes are suggested: economic, educational, and psychosocial.

### Economic Outcomes

As mentioned earlier, much of the research on the effectiveness of vocational education has focussed on economic outcomes. These types of outcomes are usually measured in terms of the experiences of former vocational education students in the labor market. Examples of economic outcomes include--

- Labor force participation rates
- Employment and unemployment rates
- Training-related placement
- Type of employment
- Earnings
- Employee satisfaction with work
- Employer satisfaction with employees

**Labor force participation rates** refer to the extent to which individuals are actually working or seeking work. It does not include those individuals who have "given up" and stopped seeking work even though they are unemployed.

The outcomes of **employment and unemployment rates** are determined by the percentage of individuals who are either working or not working. This outcome, as well as the previous one, can be compared with state and national statistics for similar groups of individuals if the same definitions have been used in computing the rates.

Historically, **training-related placement** has been the major outcome for evaluating vocational education. This outcome refers to the percentage of individuals who find employment in the occupations for which they were trained. This outcome often has been criticized since its achievement is determined by many factors that are beyond the control of voca-

tional educators. However, it has remained an important outcome.

The **type of employment** has also become an important outcome as emphasis on vocational education's role in economic development has increased. Since many new jobs are in small businesses, self-employment has become a legitimate outcome for vocational education, and many entrepreneurship programs have been developed with this specific result in mind. The percentage of males and females distributed across all types of occupations is another important factor, and many programs have been specifically designed to address inequities in these occupational areas.

**Earnings** received from working represent another type of outcome for vocational education programs. In determining earnings, it usually helpful to think in terms of annual earnings that reflect both the hourly wages and number of hours worked. Annual earnings also allow evaluators to compare the wages of those who work as employees with those who are self-employed. Also, it is often interesting to examine and compare the earnings of those who are employed in the occupations for which they were trained with those who are working in occupations unrelated to their training.

The degree of **employee satisfaction with work** is classified here as an economic outcome since it is often reflected in the productivity of an individual. Although it is also influenced by many factors beyond the control of vocational education, it can reflect the degree to which a student's program developed a realistic picture of the workplace.

Similarly, **employer satisfaction with employees** is classified as an economic outcome since it can be a reflection of a company's success in the marketplace. Again, this factor is influenced by many factors beyond how well the employer is satisfied with the educational preparation individual employees have received. Therefore, evaluators need to interpret the results obtained for this outcome and the previous one with caution.

### Educational Outcomes

Legislators and policy makers are moving more toward accountability measures tied to the instructional outcomes of educational agencies. This reflects quite a departure from the institutional or process evaluations that have been used in the past. This growing concern for educational outcomes is being reflected in revisions to statewide approaches to vocational education evaluation in states such as Illinois, Minnesota, and Virginia. Possible educational outcomes include--

- Academic skills
- Higher-order thinking skills
- Knowledge of the world of work
- Occupational skills
- School attendance and dropout rates
- Continuing education rates
- Students' satisfaction with education

The development of **academic skills** in such areas as mathematics and English is an outcome that more than 86 percent of the public perceives as important for all students (Elam 1990). The high level of importance placed on these subjects indicates that vocational teachers should also emphasize the development of these skills in their courses by showing students how these skills can be applied.

**Higher-order thinking skills** require students to do more than simply recall or

understand information. The development of these higher-order thinking skills requires students to apply, analyze, synthesize, and/or evaluate information (Bloom 1956) in solving problems. If teachers are to develop these types of skills, the objectives, instructional activities, and evaluation processes should reflect this type of emphasis.

Another educational outcome is **knowledge of the world of work**. If, as Cetron and Davies (1989) predicted for the next decade, new jobs will appear and obsolete jobs will disappear faster than ever before, individuals will need to know the types of jobs that will be available to them as the work force changes. Among the types of jobs that Cetron and Davis predicted as good opportunities are computers and data processing, telecommunications, health care, biotechnology, advanced materials, hazardous-waste disposal and pollution control, education and vocational training, and personal and business services.

**Occupational skills** have been the major outcome of interest to many vocational educators. Much of the evidence for this outcome has been provided through the use of competency or performance testing. Though the public believes that vocational education should be required for all students not planning to go on to college (Elam 1990), evidence on student occupational achievement is still needed.

**School attendance and dropout rates** are particularly important outcomes. If the country is to increase the educational level of students, it is imperative that school attendance rates be increased and dropout rates be decreased. These rates should be examined for differences among racial/ethnic groups, given the wide disparity in these rates across groups.

The **continuing education rates** for students represent a recent outcome for vocational education. In a national longitudinal study of more than 6,000 individuals, Laughlin (1986) reported that 62 percent of vocational education initially enrolled in some type of postsecondary education and training. Of those who enrolled, 62 percent completed the program or were still enrolled at the time of the follow-up.

### Psychosocial Outcomes

The psychosocial outcomes of vocational education relate primarily to the personal development of the individual student. These outcomes are often the result of experiences in vocational education student organizations. Some of these outcomes are difficult to measure, and indicators of their effectiveness are not readily available. These outcomes include--

- Aspirations
- Attitudes and values
- Self-esteem
- Citizenship
- Leadership

The **aspirations** of students refer to their desires and ambitions. Many students do not have role models to use as examples in setting personal goals and selecting potential career areas. Therefore, the experiential learning provided by vocational education provides students with real-life examples to use in planning their future. Sometimes the personal contacts provide the opportunity for students to identify role models that they wish to emulate.

Employers often criticize the **attitudes and values** that individuals bring to the workplace. Teachers and administrators have

the opportunity to influence students' attitudes and values by the personal examples they give to students. This outcome can also be influenced through the student's occupational experience program and the vocational student organization.

**Self-esteem** refers to the belief students have in themselves. It also refers to their self-respect. This outcome can be influenced by how individuals interact with students. Positive learning environments need to be established by teachers, administrators, occupational experience supervisors, and other students and co-workers.

The outcome of **citizenship** refers to how students demonstrate their membership in society by acts such as voting and participation in community organizations. The vocational student organizations provide microcosms in which to practice the duties, rights, and privileges related to this outcome.

**Leadership** skills will be needed throughout a student's life. These skills will determine how students direct, command, or guide their colleagues or an activity. Excellent opportunities for students to develop these skills, as well as citizenship, are provided by the vocational student organization.

## USING THE EVALUATION FRAMEWORK

This section describes how to use the framework in evaluating vocational education programs. As mentioned earlier, the framework is not a rigid model, but a guide for thinking through evaluations of vocational education programs. As such, the framework is helpful in delineating and designing program evaluations.

To use this framework, it must be adapted to the situation. First, it will be necessary to decide the type, purpose, and extent of the evaluation. Then, it will be necessary to set priorities on the most important information to be collected. Once these determinations have been made, data can be collected and the information analyzed and interpreted. Finally, a report can be prepared presenting the results of the evaluation. Each of these steps is described here.

### Determine the Type, Purpose, and Extent of the Evaluation

Earlier, a distinction was made between two types of evaluation: formative and summative. Formative evaluation occurs throughout the operation of a program to determine how it might be revised or improved. Summative evaluation is conducted at the end of a program to provide evidence on the effectiveness of the program and is used primarily for accountability purposes. The type of evaluation to be conducted is affected by whoever requested the evaluation. Vocational program operators most often are interested in formative evaluation, whereas program funders and sponsors usually are interested in summative evaluation. Therefore, it is essential to determine the type of evaluation that is desired. Will the primary purpose of the information be to improve the operation of the program (formative) or to provide accountability information (summative)?

Several purposes for conducting evaluations exist (Brinkerhoff, Brethower, Hluchyj, and Nowakowski 1983a). Among the major purposes that an evaluation might address are the following:

- To find out if there is a need for the program
- To determine if the goals and objectives of a program have been met
- To decide if the ways in which a program operates are adequate
- To see if a program operates in the way it was intended
- To determine the outcomes of a program

Finally, a decision must be made regarding the extent of the evaluation. Is it to involve all the vocational programs in an educational organization? Is it to be selective and address only vocational programs that are experiencing problems in reaching their objectives or are not achieving the desired level of performance standards? Should information be collected from all the students? Should

information be collected only from at-risk students?

The decisions regarding the type, purpose, and extent of evaluation are very important if useful and objective evaluations are to be designed and conducted. A design team of seven to nine individuals representing local advisory groups, teachers, and administrators can be used in making these decisions. The majority of this team should be composed of people outside the educational organization if the evaluation is to be viewed as a credible assessment.

### Select the Components to Be Included

Once the type, purpose, and extent of the evaluation have been decided, the components of the evaluation must be chosen from the framework. The current emphasis on documenting the results of educational programs suggest that the components of vocational education outcomes provide an appropriate place to start.

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 states that all vocational education programs are to evaluate their programs using measures of learning and competency gains including student progress in the achievement of basic and more advanced academic skills. The component in the framework that addresses this area is academic skills. The Perkins Act also calls for one or more measures of performance from outcomes such as occupational skills, retention in school, placement into additional training or education, and placement into the military service or employment. These outcomes are included in the framework as occupational skills, school attendance rates, continuing education rates, training-related placement, and employment rates.

Some states may have other types of outcomes that they wish to emphasize in their vocational education programs. Local educational agencies may also have the same or other outcomes of interest to them. All these factors need to be considered when selecting the type of outcomes used to focus the evaluation of vocational education programs.

The next step is to select components from the framework that relate to vocational education processes and needs for vocational education. These components should be those that most likely influence the vocational education outcomes that were selected. This information will be needed to help explain or interpret the findings of the evaluation.

It should not be surprising to find that there are more components of the evaluation than can be included. Therefore, these components must be placed in order of priority based on the type and purpose of evaluation that was selected in the previous step. Once this priority has been established, the selection can be based on the resources available.

### Identify the Sources and Types of Information to Be Collected

Once the components to be included in the evaluation are selected, the type of data or information that it will be necessary to collect must be identified. A sample listing of potential sources of information for each component is presented in figure 3. A wide range of potential sources of information--both qualitative and quantitative--exists. Whenever possible it is desirable to obtain more than one type of information about a component to be included in the evaluation of vocational education programs.

| Component | Potential Sources of Information |
|---|---|
| Academic Skills | Educational Achievement by Grade and Age on the Iowa Tests of Basic Skills or California Achievement Tests |
| Occupational Skills | National Occupational Competency Tests for an occupation |
| Educational Competence of Staff | College Transcripts<br>National Teachers Examination |
| Demographic Characteristics of Students | Individual Student Records<br>Interviews with Students |
| Goals and Objectives of Program | Course of Study<br>Interviews with Teachers |
| Instructional Content | Lesson Plans<br>Observation of Classes |
| Instructional Delivery Methods | Observation of Classes<br>Interviews with Teachers |
| Teaching Styles | Observation of Teachers<br>Survey of Teaching Styles |

Figure 3. A sample listing of potential sources of evaluation information

### Collect the Required Information

Collecting information is an important step in conducting an evaluation of vocational education programs. This information will provide the evidence to be used in judging the value of the program. Remember that the evaluation will only be as good as the quality of information collected. According to Worthen and Sanders (1987)--

> information is situational and changes with every evaluation. Similarly, the methods evaluators must use to collect information also must change. Sometimes alternative data-collection methods are available, and the evaluator must make a choice, considering cost, precision (reliability), stability, relevance, validity of measurements, feasibility, political advisability, and acceptability to various audiences. The evaluator must be ready to use whichever method or methods appear most appropriate. And "being prepared" usually means having prior experience. We advise evaluators to gain experience with any methods that may be new to them--

> and that means actually using the methods, not just reading about them. (pp. 298-299)

Usually it is necessary to establish agreements with those whose assistance will be needed in collecting evaluation information. Large schools often have very detailed procedures that must be followed in these efforts. Approval for accessing the required information may be needed.

### Analyze and Interpret the Information Collected

The process of analyzing and interpreting the information collected is also an important task. It is likely that evaluation efforts will collect a large amount of information. Somehow this information must be assembled cohesively so that others can comprehend the findings.

Analysis of data is one way that information can be reduced to a meaningful level. Often, measures of central tendency (that is, medians, means, modes) are used to summarize quantitative data. Other times, ranges and correlations may need to be used to indicate the diversity or similarity of data. It may even be necessary to use statistics such as chi-square, t-tests, and analysis of variance to interpret the information.

The analysis of qualitative information requires the evaluator to be involved in an ongoing process of observation and reflection, drawing conclusions and testing these conclusions as additional information becomes available. Miles and Huberman (1984) provided an excellent discussion regarding the analysis of qualitative data.

### Prepare an Evaluation Report

The results of the evaluation need to be reported to the stakeholders (those directly affected by the evaluation results) of the vocational education program. These reports can be used for a variety of purposes besides determining the worth of a program. Other uses include image building, education, and public relations. Besides considering the purpose an evaluation report is to serve, evaluators need to consider the audience for the report. The purpose and the intended audience will dictate the form of the evaluation report. Worthen and Sanders (1987) suggested the following types of evaluation reports: written reports, photo essays, audiotaped reports, slide-tape presentations, filmed or videotaped reports, multimedia presentations, dialogues/testimonies, hearings or mock trials, product displays, simulations, scenarios, portrayals, case studies, graphs and charts, test score summaries, and questions/answers (pp. 344-345).

### Concluding Remark

This paper is not intended to be a complete handbook for conducting evaluations. Handbooks and guidelines of this type are available by such authors as Brinkerhoff et al. (1983a,b), Herman (1989), and Worthen and Sanders (1987).

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